



Advisory Council
on Science and
Technology

Conseil consultatif
des sciences et de
la technologie

SUPPORTING
DOCUMENT

29

Compensation Trends in the Information and Communications Technology and Biotechnologies Sectors

Prepared for the Expert Panel on Skills
by Chris Parsley

June 1999

Canada

**Compensation Trends in the
Information and Communications Technology
and Biotechnology Sectors**

by Chris Parsley

June 7, 1999

This publication is also available electronically on the World Wide Web at the following address:
<http://acst-cest.gc.ca/skills>

This publication can be made available in alternative formats for persons with disabilities upon request. Contact the Distribution Centre at the numbers listed below.

This document is part of a series of research documents which constitute background material for The Report of the Expert Panel on Skills. For additional copies of this publication, available on CD ROM, please contact:

Information Distribution Centre
Communications Branch
Industry Canada
Room 205D, West Tower
235 Queen Street
Ottawa ON K1A 0H5

Tel: (613) 947-7466
Fax: (613) 954-6436
E-mail: publications@ic.gc.ca

© Her Majesty the Queen in the Right of Canada (Industry Canada) 2000
Cat. No. C2-467/2000-16E-IN

The views expressed in this document are not necessarily those of the Government of Canada.

CONTENTS

Introduction	1
Information Technology (IT) Sector	1
Growth in Base Compensation by Job	1
Growth in Total Compensation by Job	2
Base Compensation Growth Rates by Job Level	3
Regional Trends	4
Summary of IT Sector	7
Biotechnology Sector	7
Growth in Base Compensation by Job	7
Growth in Total Compensation by Job	9
Base Compensation Growth Rates by Job Level	10
Regional Trends	11
Summary	11

Introduction

This brief report is drawn from data supplied by Personnel Systems from their compensation surveys for the two sectors, information technology and biotechnology. In both sectors Personnel Systems were responsible for selecting those jobs which are, in their opinion the most significant in terms of compensation growth and for which sufficient data points were available. Personnel Systems is responsible for reviewing and verifying the accuracy of survey respondents and job specifications and for ensuring the reliability of the data with respect to salaries submitted by companies.

The Appendices contain compensation tables for the IT and biotechnology sectors along with specific job specifications and past survey participants.

The brief summary notes highlight the principal findings of this data in terms of growth rates of base and total compensation levels, including an analysis by job title, job level, and region. All growth rates quoted are annualized figures, except for those relating to sample size.

Information Technology (IT) Sector

Among the jobs listed in their survey Personnel Systems selected six jobs which were the most significant in terms of salary growth and sample size:

- IT Manager
- Programmer/Analyst
- Database Analyst
- Software Developer
- Systems Design Engineer and
- Customization Programmers.

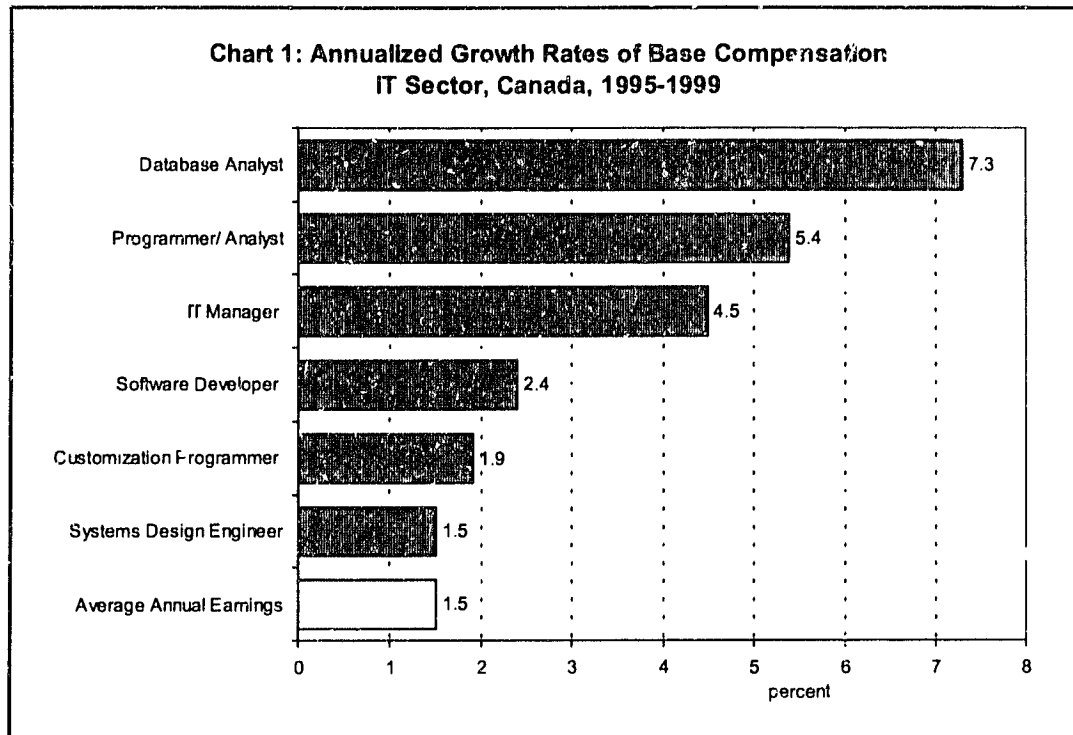
Growth in Base Compensation by Job

Chart 1 shows the growth in base compensation for six jobs in the IT sector. For comparison the average annual earnings for all industries has been included. Personnel Systems estimates the annual growth rate in base compensation in the IT sector to be in the range of 2.0 to 2.5 percent.

- Database Analysts have the highest growth rate at 7.3 percent on an annualized basis, followed by Programmer Analyst (5.4 percent) and IT managers (4.5 percent). The other jobs are either close to the IT industry average (software developers) or close to the average for all industries at 1.5 percent¹.

¹ The annualized growth rate for the all industries average is based on the period September 1995 to February 1999 compared to September 1995 to May 1999 for the IT jobs.

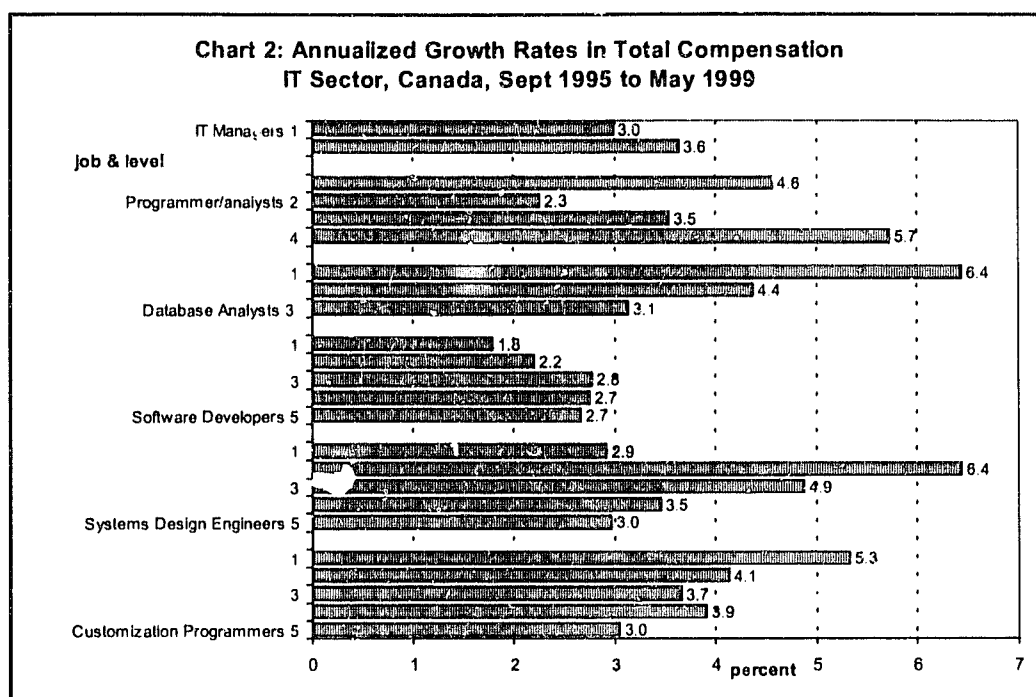
Sample sizes of both Database Analyst and IT Manager are smaller than the other jobs selected. The sample size for the IT manager has fallen by 50 percent over the period September 1995 to May 1999 (Appendix A Table 3).



Growth in Total Compensation by Job

Chart 2 shows the annualized growth rates in total compensation (base compensation plus incentive pay) for each job. Incentives refer to bonuses and other targeted cash awards. Incentive pay has only become more prevalent beginning in 1998.

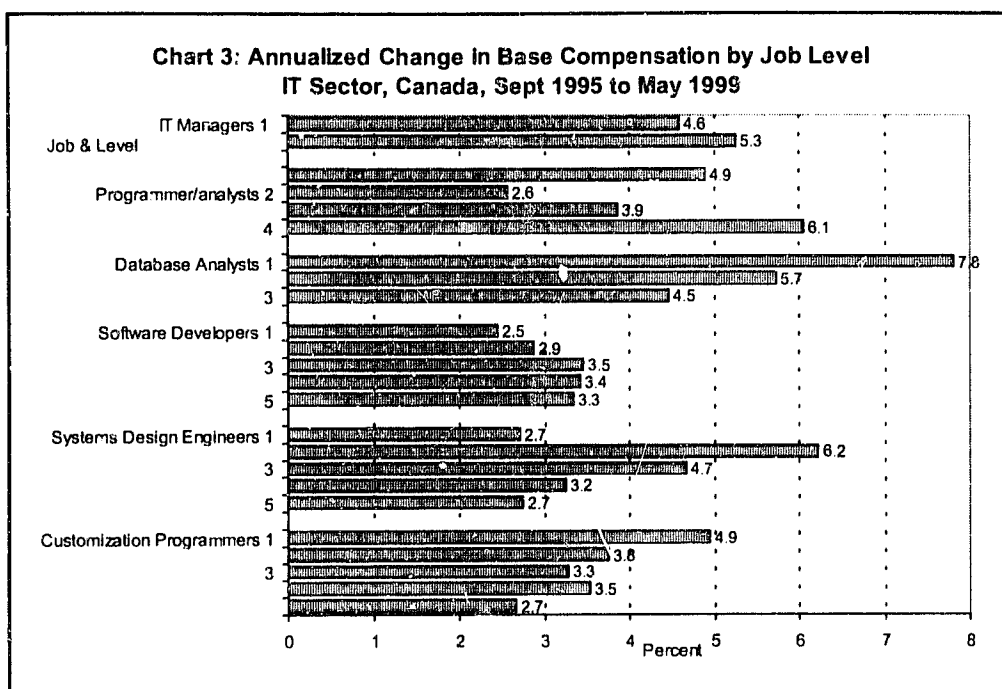
- The same three occupations have the highest growth rates – Database Analyst (5.9 percent), Programmer/Analyst (5.1 percent) and IT Managers (2.9 percent).
- In only two of the selected jobs do compensation incentives augment the growth of compensation: Customization Programmer and Systems Design Engineer. For other groups base salaries have grown faster than incentive pay.



Base Compensation Growth Rates by Job Level

Chart 3 shows the annualized growth rates of base compensation for the different job according to the level within each job. Within each job shown, job level rises as one moves up the axis. The specification requirements for each job level for professional jobs are shown in Appendix C.

- Among IT managers and Systems Design Engineers, higher rates of compensation growth are observed at higher job levels.
- By contrast, for Database Analysts and Customization Programmers, higher growth rates are to be found at the lower job levels.
- The highest growth rates among Programmer/Analyst were to be found at the lowest and the most senior job levels, with low compensation growth rates for intermediate job levels.
- Compensation growth does therefore not appear to be related to job level in the same manner across the selected jobs in the IT sector.
- The highest growth rates were recorded in Database Analysts 1 (7.8 percent), Systems Design Engineers 2 (6.2 percent) and Programmer Analysts 3 (6.1 percent).
- The sample size is very small for Database Analysts 1 (and has also fallen 25 percent over the period Sept 1995 to May 1999, see Appendix A Table 3).
- The same pattern between compensation growth rates and job levels is also apparent from total compensation figures.



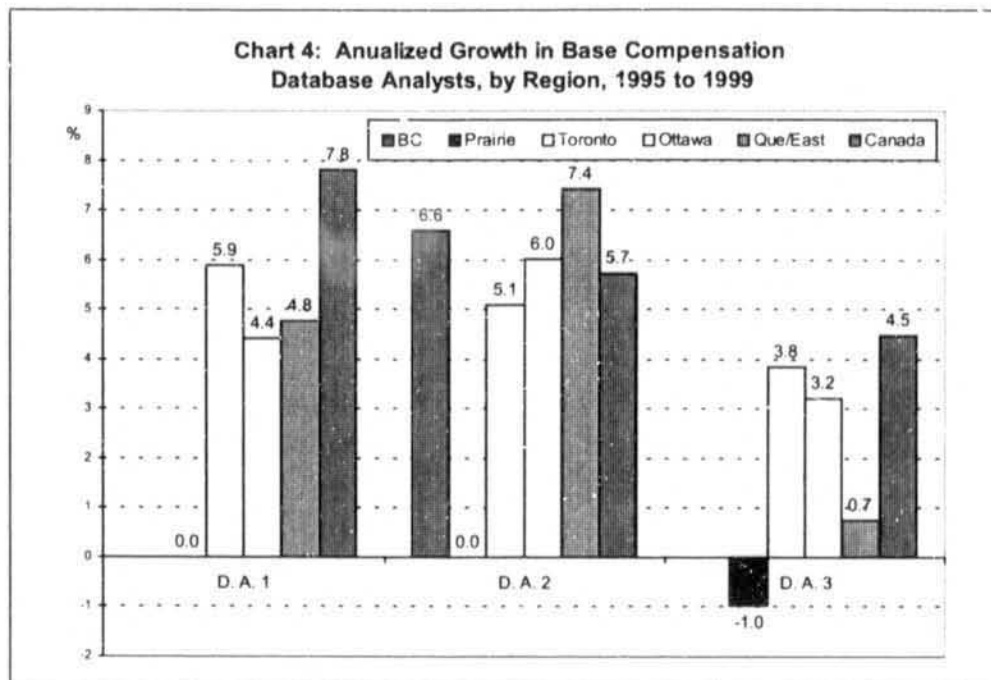
Regional Trends

Regional breakdowns of the compensation survey data were available (Appendix A Table 4 to Table 8). Some of the sample sizes are likely to be very small however, although regional sample numbers were not available.

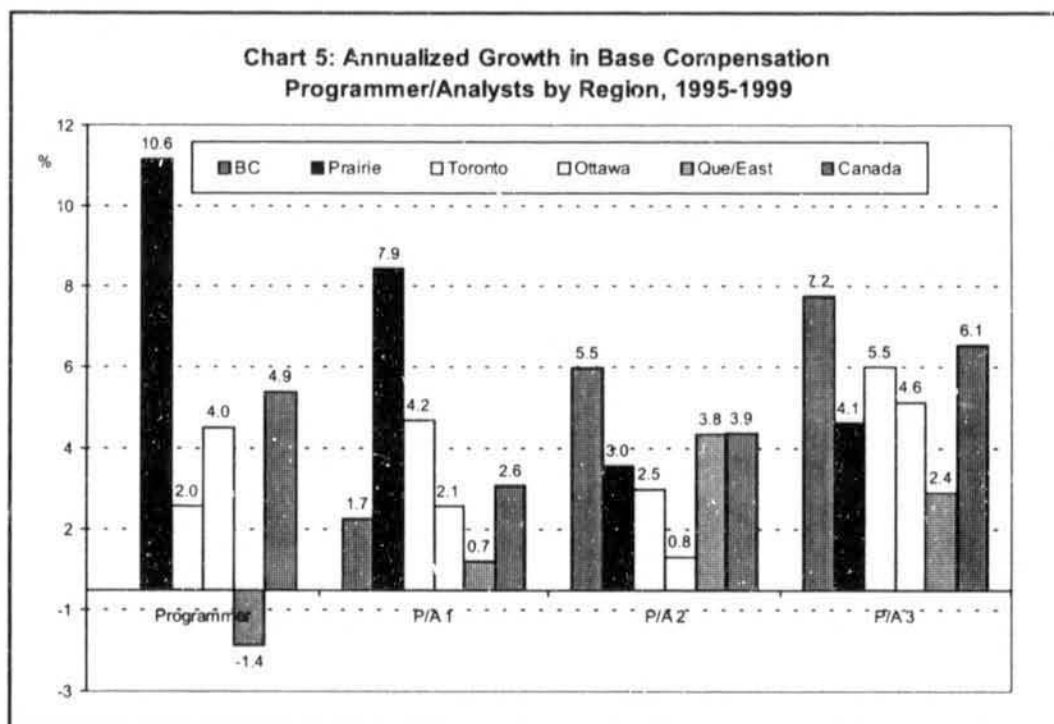
Charts 4, 5, and 6 show the regional breakdown by job level for the three jobs with the highest growth in compensation from 1995 to 1999: Database Analysts, Programmer/Analyst and IT Manager.

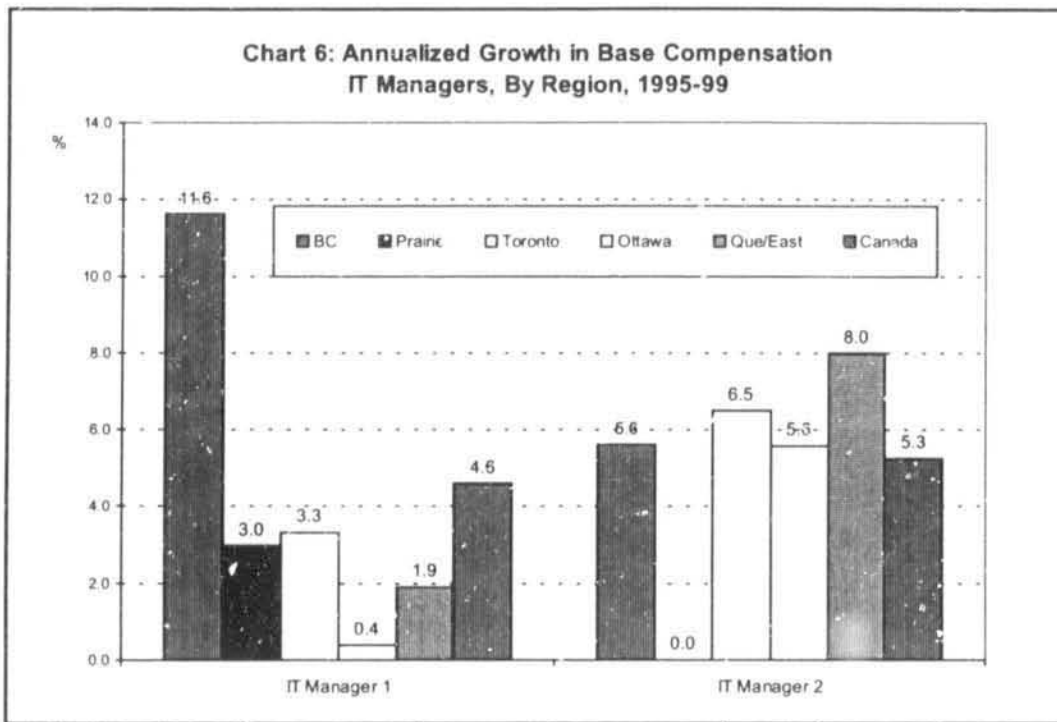
- In many of the job levels, compensation growth is above the Canadian average in British Columbia
- The sample sizes for Database Analyst and IT Manager are likely to be small and should be interpreted with caution.
- The larger sample of Programmer Analysts indicates that the high growth of compensation is above average in British Columbia for the higher job levels. In the lower job levels compensation growth is above average in the Prairies and Toronto regions.
- For the other three jobs, (Software Developer, Systems Design Engineer and Customization Programmer) above average compensation growth is most often observed in the Toronto and Ottawa regions and to a lesser extent Quebec and the East (Appendix A Table 9). Sample sizes for these groups should be satisfactory.

**Chart 4: Annualized Growth in Base Compensation
Database Analysts, by Region, 1995 to 1999**



**Chart 5: Annualized Growth in Base Compensation
Programmer/Analysts by Region, 1995-1999**





Summary of IT Sector

- For the selected jobs, significantly higher wage growth based on a large sample size is observed for Programmer Analysts, with higher growth rates in British Columbia.
- Significantly higher compensation growth rates are evident for Database Analysts and IT Managers but their sample size is much smaller.
- Other jobs among those selected have growth rates close to the IT industry average, some cases lower. Generally the selected jobs have compensation growth rates at average earnings for all industries.
- The relationship between compensation growth and job level varies among the jobs
- The main source of compensation growth has generally been base salaries. Incentive pay only positively affected compensation growth for Systems Design Engineers and Customization Programmers.

Biotechnology Sector

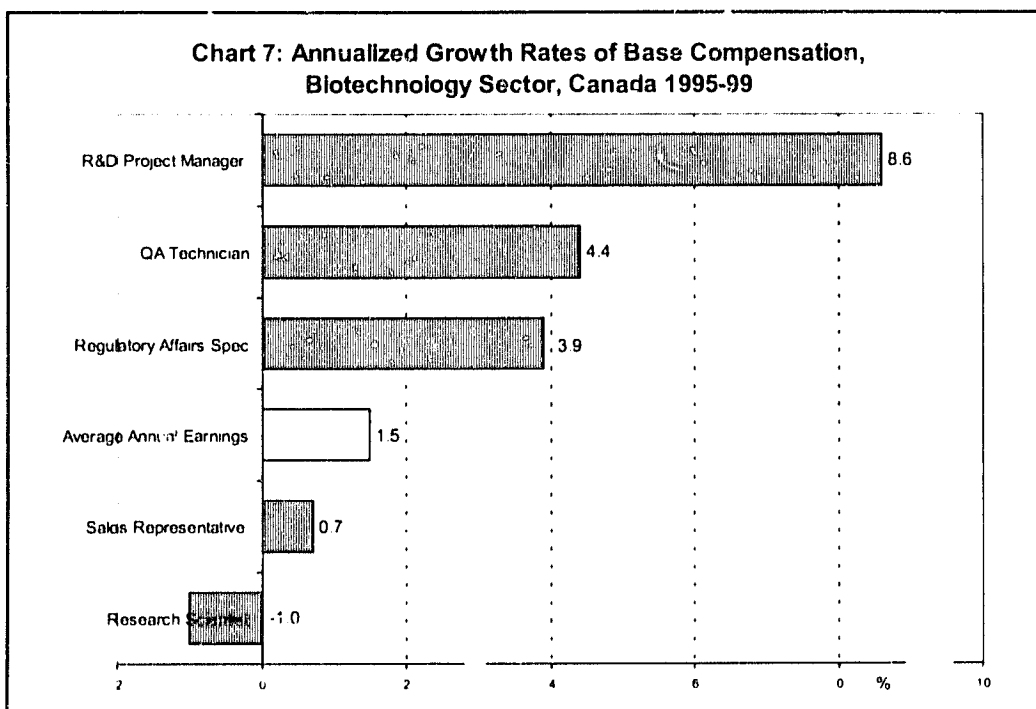
The biotechnology sector is significantly smaller than the IT sector and the sample numbers from the compensation survey reflect this. Consequently some of these conclusions should be interpreted with caution. Among the jobs listed in their survey Personnel Systems selected five jobs which were the most significant in terms of salary growth and sample size: Research and Development (R&D) Project Manager; Research Scientist; Quality Assurance (QA) Technician; Sales Representative and Regulatory Affairs Specialist. The specific functions of these jobs are detailed in the Appendix D.

Growth in Base Compensation by Job

Chart 7 shows the growth in base compensation for the five jobs in the biotechnology sector. For comparison, the average annual earning for all industries has been included. Personnel Systems estimates the annual growth rate in base compensation in the biotechnology sector to be in the range of 2.0 to 2.5 percent

- R&D Project Managers have the highest growth rate in base compensation – 8.6 percent on an annualized basis. These are followed by QA Technician (4.4 percent) and Regulatory Affairs Specialist (3.9 percent).
- Growth rates for the other jobs are below that average for all industries and base salaries for Research Scientists fell by 1 percent on an annualized basis.

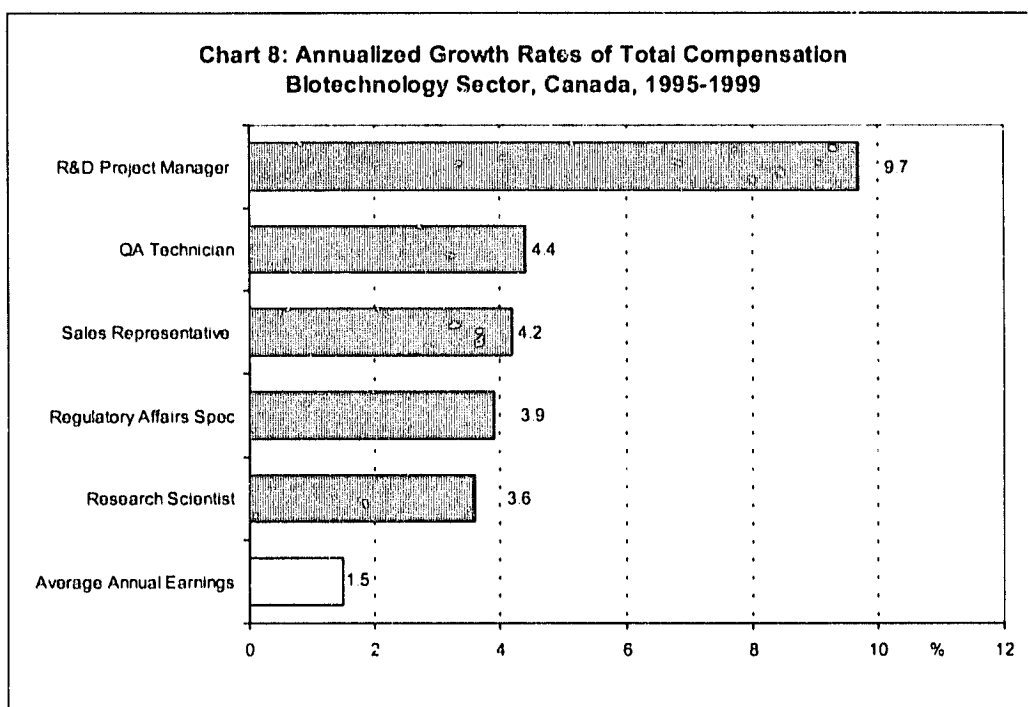
- Sample sizes for the three jobs with the highest growth in base compensation are considerably smaller than for the other jobs.



Growth in Total Compensation by Job

Chart 8 shows the annualized growth rates in total compensation (base compensation plus incentives) for each job. Incentives refer to bonuses and other targeted cash awards. Incentive pay has only become more prevalent beginning in 1998

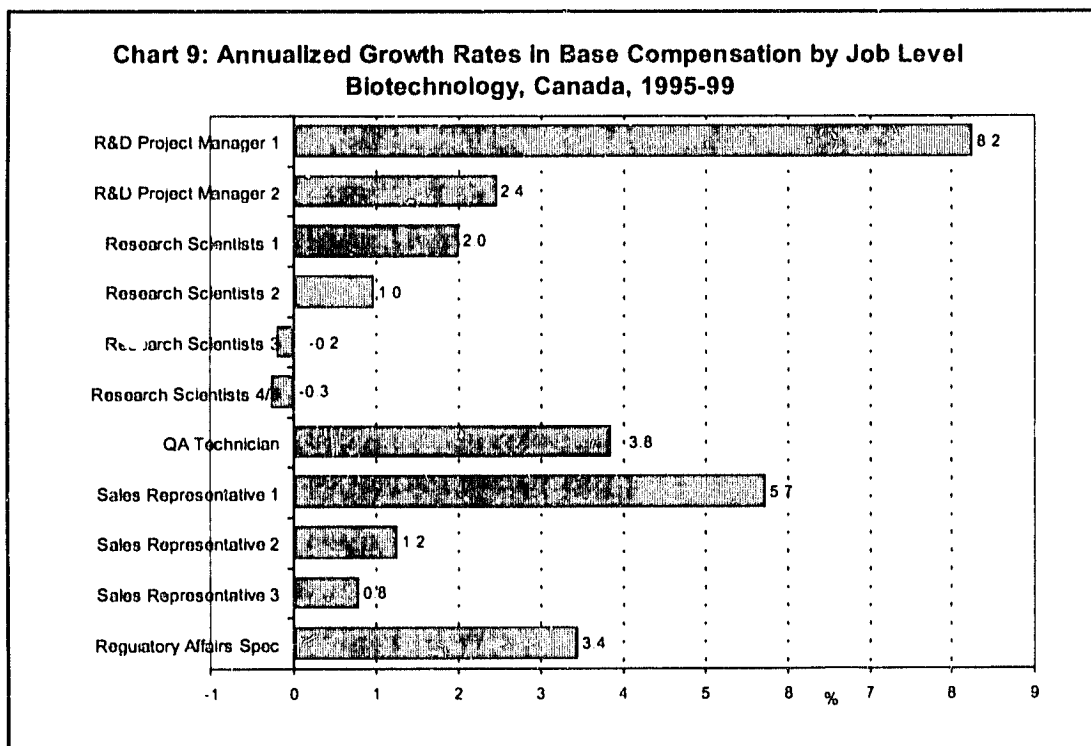
- Incentives make a significant difference to Sales Representatives and Research Scientists. The annualized growth rates are now higher than the biotechnology industry average at 4.2 percent and 3.6 percent respectively.
- R&D project managers continue to have the highest growth rates at 9.7 percent on an annualized basis.
- Both QA Technicians and Regulatory Affairs Specialists do not receive incentive pay.
- The same pattern between compensation growth rates and job levels is also apparent from total compensation figures.



Base Compensation Growth Rates by Job Level

Chart 9 shows the annualized growth rates of base compensation for the different job according to the level within each job. Within each job shown, job level rises as one moves up the axis. The specification requirements for each job level for professional jobs are shown in the Appendix D.

- For those occupations where there is more than one job level, in all cases growth in base compensation is higher at the lower job levels. Thus the annualized growth rate for level 1 R&D Project Managers is 8.2 percent compared to 2.4 percent for level 2. Similarly base salaries for level 1 Sales Representatives grew at 5.7 percent compared to just 0.8 percent for level 3 Sales Representatives.
- Unfortunately incentives data by job level is not available to see if the compensation of higher level workers is more the result of incentive pay.



Regional Trends

- The regional data in the biotechnology sector is based on very small numbers and is therefore open to question.
- Furthermore the regional groupings were changed in 1997; consequently comparisons over the period 1995 are only possible for Ontario.
- For both these reasons, specific regional charts are not included. The regional data for 1997 to 1999 is shown in Appendix B Tables 13 and 14.

Summary

- Higher growth rates than the biotechnology industry average for total compensation are observed in all the selected jobs.
- The element of incentives is important in Sales Representatives and Research Scientist.
- Higher growth in base compensation is observed at lower job levels.